

SUPPLEMENTAL MATERIAL**Table 1 Supplemental.** Frequency of symptoms and clinical signs compatible with COVID-19 at hospital admission according to ACEI/ARBs use

	Total (n = 11717)	ACEI/ARBs		
		No use (n = 8189, 69.9%)	Use (n = 2810, 23.9%)	Unknown use (n = 718, 6.1%)
Symptoms at admission				
Fever (n, %)	7187 (61.3)	5112 (62.4)	1653 (58.8)	422 (58.8)
Cough (n, %)	6231 (53.2)	4444 (54.3)	1438 (51.2)	349 (48.6)
Breathlessness (n, %)	5997 (51.2)	4194 (51.2)	1349 (52.0)	376 (47.6)
Weakness (n, %)	4672 (39.9)	3253 (39.7)	1153 (41.0)	266 (37.0)
Pain (n, %)	2622 (22.4)	1931 (23.6)	544 (19.4)	147 (20.5)
Diarrhea (n, %)	1673 (14.3)	1173 (14.3)	438 (15.6)	62 (8.6)
Nausea and vomiting (n, %)	1364 (11.6)	987 (12.1)	311 (11.1)	66 (9.2)
Headache (n, %)	1234 (10.5)	932 (11.4)	245 (8.7)	57 (7.9)
Irritability (n, %)	838 (7.2)	556 (6.8)	243 (8.6)	39 (5.4)
Throat pain (n, %)	700 (6.0)	520 (6.3)	141 (5.0)	39 (5.4)
Anosmia (n, %)	424 (3.6)	334 (4.1)	79 (2.8)	11 (1.5)
Missing (n, %)	855 (7.3)	593 (7.2)	216 (7.7)	46 (6.4)
Runny nose (n, %)	416 (3.6)	301 (3.7)	91 (3.2)	24 (3.3)
Clinical signs at admission				
Abnormal pulmonary imaging (n, %)*	7396 (63.1)	5271 (64.4)	1835 (65.3)	290 (40.4)
Abnormal pulmonary auscultation (n, %)	5245 (44.8)	3701 (45.2)	1343 (47.8)	201 (28.0)
Dyspnea (n, %)	4966 (42.4)	3462 (42.3)	1196 (42.6)	308 (42.9)
Pharyngitis (n, %)	244 (2.1)	174 (2.1)	58 (2.1)	12 (1.7)
Coma (n, %)	72 (0.6)	50 (0.6)	16 (0.6)	6 (0.8)
Conjunctivitis (n, %)	57 (0.5)	37 (0.5)	18 (0.6)	2 (0.3)
Convulsions (n, %)	15 (0.1)	12 (0.1)	3 (0.1)	0 (0.0)

ACEI; Angiotensin converting enzyme inhibitors, ARBs. Angiotensin receptor blockers

* Reported as abnormal pulmonary imaging compatible with pneumonia

Table 2 Supplemental. Results (OR, 95%CI) of variable selection models of conditions associated with ACEI/ARBs use among factors with COVID-19 prognosis¹

Variable	Model 1	p-value	Model 2	p-value
Intercept	0.04 (0.03-0.05)	< 0.0001	0.03 (0.03-0.05)	< 0.001
Gender (male)	1.33 (1.21-1.47)	< 0.0001	1.26 (1.12-1.41)	< 0.001
Age	1.01 (1.01-1.02)	< 0.0001	1.01 (1.01-1.02)	< 0.001
CVD	1.71 (1.55-1.90)	< 0.0001	1.65 (1.46-1.87)	< 0.001
Diabetes	1.38 (1.24-1.54)	< 0.0001	1.37 (1.20-1.56)	< 0.001
HBP	5.65 (5.10-6.27)	< 0.0001	5.28 (4.66-6.00)	< 0.001
Obesity			1.33 (1.10-1.59)	< 0.01
Cognitive impairment			0.69 (0.58-0.82)	< 0.001

¹ Backwards stepwise logistic regression with variable selection according to AIC; OR, odds ratio. Model 1 included: Gender, age, HBP, CVD, DM, chronic renal disease, chronic liver disease, chronic lung disease, solid malignant neoplasms, hematological cancers, immunodepression (N=10866); Model 2 included: Model 1 variables plus cognitive impairment, chronic neuro-muscular disease, and obesity, for which a high degree of missingness was observed and represents a complete case analysis (N=7,294)

Table 3 Supplemental. State-arrival extended Cox-Markov models transitions hazard ratios (HR, 95%CI) as a function of ACEI/ARBs and identified confounders**Model 1**

Transition	ACEI/ARBs use	Male gender	Age < 70	Age > 70	CVD	HBP	DM	Time to severity
1 Admission to Severity	1.15 (0.98, 1.36) 0.092	1.83 (1.58, 2.12) <0.0001	1.02 (1.01, 1.02) <0.0001	0.90 (0.89, 0.91) <0.0001	0.96 (0.82, 1.12) 0.575	1.35 (1.15, 1.58) <0.0001	0.94 (0.79, 1.11) 0.440	
2 Admission to Recovery	1.07 (1.01, 1.13) 0.027	0.89 (0.85, 0.93) <0.0001	0.97 (0.97, 0.97) <0.0001	0.96 (0.96, 0.97) <0.0001	0.86 (0.81, 0.91) <0.0001	0.95 (0.89, 1.00) <0.0001	0.92 (0.87, 0.98) 0.043	0.007
3 Admission to Death	0.83 (0.75, 0.93) 0.001	1.45 (1.31, 1.59) <0.0001	1.11 (1.09, 1.13) <0.0001	1.05 (1.04, 1.05) <0.0001	1.13 (1.02, 1.25) <0.0001	1.00 (0.90, 1.10) 0.015	1.09 (0.98, 1.22) 0.947	0.102
4 Severity to recovery	1.16 (0.97, 1.38) 0.098	0.90 (0.77, 1.04) 0.158	0.97 (0.96, 0.97) <0.0001	1.00 (0.98, 1.02) 0.799	1.03 (0.87, 1.21) 0.766	0.95 (0.81, 1.12) 0.570	1.01 (0.85, 1.19) 0.919	0.95 (0.93, 0.97) <0.0001
5 Severity to death	0.91 (0.73, 1.13) 0.381	1.11 (0.91, 1.36) 0.316	1.05 (1.03, 1.06) <0.0001	1.05 (1.03, 1.07) <0.0001	1.07 (0.88, 1.30) 0.494	0.90 (0.74, 1.11) 0.326	1.25 (1.02, 1.53) 0.034	1.02 (1.00, 1.04) 0.056

Model 2

Transition	ACEI/ARBs use	Male gender	Age < 70	Age > 70	CVD	HBP	DM	Cognitive issues	Obesity	Time to severity
1 Admission to severity	1.10 (0.88, 1.36) 0.409	1.71 (1.42, 2.08) <0.0001	1.02 (1.01, 1.03) 0.001	0.92 (0.90, 0.93) <0.0001	0.91 (0.74, 1.12) 0.361	1.45 (1.18, 1.79) 0.001	0.96 (0.77, 1.19) 0.686	0.52 (0.35, 0.77) 0.001	1.58 (1.24, 2.02) <0.0001	
2 Admission to recovery	1.05 (0.98, 1.13) 0.182	0.89 (0.84, 0.94) <0.0001	0.97 (0.97, 0.97) <0.0001	0.97 (0.96, 0.97) <0.0001	0.88 (0.82, 0.94) <0.0001	0.97 (0.91, 1.04) 0.377	0.93 (0.87, 1.00) 0.061	0.83 (0.76, 0.91) <0.0001	1.01 (0.92, 1.11) 0.882	
3 Admission to death	0.80 (0.70, 0.91) 0.001	1.48 (1.31, 1.66) <0.0001	1.10 (1.07, 1.12) <0.0001	1.05 (1.04, 1.05) <0.0001	1.13 (1.00, 1.27) <0.0001	1.03 (0.91, 1.16) 0.048	1.11 (0.97, 1.27) 0.685	1.36 (1.19, 1.55) 0.116	0.97 (0.76, 1.24) <0.0001	
4 Severity to recovery	1.16 (0.93, 1.45) 0.195	0.90 (0.75, 1.09) 0.272	0.97 (0.96, 0.98) <0.0001	1.00 (0.97, 1.02) 0.861	1.12 (0.91, 1.38) 0.288	1.00 (0.81, 1.24) 0.984	0.95 (0.77, 1.16) 0.597	1.22 (0.84, 1.77) 0.297	0.97 (0.77, 1.22) 0.781	0.94 (0.91, 0.97) <0.0001
5 Severity to death	1.11 (0.83, 1.49) 0.485	1.22 (0.93, 1.60) 0.146	1.04 (1.02, 1.06) <0.0001	1.06 (1.03, 1.08) <0.0001	1.08 (0.82, 1.41) <0.0001	0.81 (0.61, 1.08) 0.591	1.44 (1.10, 1.90) 0.150	0.89 (0.53, 1.50) 0.008	0.97 (0.69, 1.36) 0.668	1.04 (1.01, 1.06) 0.860

ACEI/ARBs, Angiotensin converting enzyme inhibitors / Angiotensin receptor blockers; CVD, cardiovascular disease; DM, diabetes mellitus; HBP, high blood pressure. Model 1: Adjusted for gender, age (years), CVD, HBP, DM, and time (days) to severity; Model 2: Further by prevalent obesity, and cognitive issues.

Figure 1 Supplemental.